

### **AMENDMENTS TO THE CLAIMS**

The claims in this listing will replace all prior versions and listings of claims in the application:

- I. (Currently amended) A method for treatment of a hydrocarbon liquid media, which includes oxidation and adsorption of impurities comprising thiophenes and their higher homologs, and/or heteroatom compounds involving nitrogen and/or oxygen contained in the liquid media by a particulate catalyst impregnated sorbent, separation and removal of impurities is distinguished by the fact that the impurities are oxidized by mixing the liquid media with an oxidizing agent and flowing the mixture through a bed of the particulate catalyst impregnated sorbent at a temperature between about 50 and 100°C, the oxides of impurities are adsorbed while separation and removal of the oxides of impurities is executed by washing the particulate catalyst impregnated sorbent with a polar solvent followed by distillation of the mixture of the solvent with the oxides of impurities, and regeneration of the particulate catalyst impregnated sorbent is carried out with heat and/or by blowing through a hot gas at a temperature between about 120 and 140°C.
2. – 10. (Canceled)
11. (Previously presented) The method of claim 1, wherein the said hydrocarbon is selected from the group as follows: black oil, fuel oil, machine oil, crude oil, bunker fuel, mazoot, coke distillate, naphtha, kerosene, diesel, benzene, toluene, vacuum distillates, fuel oils, light gas oil, heavy gas oil, vacuum gas oil, PCC light cycle oil, coker gas oil, and gasoline.
- 12.-17. (Canceled)
18. (Previously presented) The method of claim 1, wherein the thiophene and higher

homologs comprise of at least one of the following: thiophene, mercaptan, benzothiophene, dibenzothiophene, naphthobenzothiophene, dinaphthobenzothiophene, and related higher aromatic thiophenes, and the alkyl and aromatic homologues of these compounds.

19. (Previously presented) The method of claim, wherein the host liquid media is a liquid coal.
20. (Original) The method of claim I, wherein oxidizing of impurities is performed using air as an oxidant.
21. (Original) The method of claim I, wherein oxidizing of impurities is performed using oxygen as an oxidant.
22. (Original) The method of claim I, wherein oxidizing of impurities is performed using ozone as an oxidant.
23. (Original) The method of claim 1, wherein oxidizing of impurities is performed using peroxide as an oxidant.
24. – 25.(Canceled)
26. (Previously presented) The method of claim 1, wherein the particulate catalyst impregnated sorbent is at least one of a metal, alkali, alkali earth metal, metal oxide, a bimetallic combination (combination of metals), impregnated into a carbon, silica, alumina, zeolite, a perlite form, or any other structurally sound porous sorbent.
27. (Previously presented) The method of claim 26, wherein the particulate catalyst impregnated sorbent comprises at least one of the catalyst metals selected from the following group: copper, zinc, silver, nickel, cobalt, iron, manganese, molybdenum, vanadium, tungsten, antimony and tin.
28. (Previously presented) The method of claim 26, wherein the particulate catalyst

impregnated sorbent includes the catalyst component comprising a bimetallic catalyst component, which in its turn should comprise a ratio of the two metals forming such a component in the range of from about 10:1 to about 1:10.

29. (Original) The method of claim 26, wherein in the particulate catalyst impregnated sorbent the catalyst metal is silver.
30. (Original) The method of claim 26, wherein in the particulate catalyst impregnated sorbent the catalyst metal is copper.
31. (Original) The method of claim 26, wherein in the particulate catalyst impregnated sorbent the catalyst metal is a mixture of silver and copper.
32. (Original) The method of claim 31, wherein in accordance with the catalyst bimetallic composition the catalyst component is a bimetallic catalyst component comprising silver and copper in a weight ratio of about 1:1.
33. (Original) The method of claim 26, wherein in the particulate catalyst impregnated sorbent the catalyst metal is cobalt.
34. (Original) The method of claim 26, wherein in the particulate catalyst impregnated sorbent the catalyst metal is nickel.
35. (Original) The method of claim 26, wherein in the particulate catalyst impregnated sorbent the catalyst metal is a mixture of nickel and cobalt.
36. (Original) The method of claim 35, wherein in accordance with the catalyst bimetallic composition the catalyst component is a bimetallic catalyst component comprising nickel and cobalt in a weight ratio of about 1:1.
37. (Original) The method of claim 26, wherein in the particulate catalyst impregnated sorbent the catalyst metal is zinc.
38. (Original) The method of claim 26, wherein in the particulate catalyst

impregnated sorbent the catalyst metal is tin.

39. (Original) The method of claim 26, wherein in the particulate catalyst impregnated sorbent the catalyst metal is a mixture of zinc and tin.
40. (Original) The method of claim 39, wherein in accordance with the catalyst bimetallic composition the catalyst component is a bimetallic catalyst component comprising zinc and tin in a weight ratio of about 2:1.
41. (Canceled)
42. (Original) The method of claim 26, wherein the particulate catalyst impregnated sorbent comprises the alkali or alkali earth metals selected from the following group: sodium, potassium, calcium and magnesium.
43. (Original) The method of claim 26, wherein the sorbent porous structure of the particulate catalyst impregnated sorbent is carbon.
44. (Canceled)
45. (Original) The method of claim 26, wherein the sorbent porous structure of the particulate catalyst impregnated sorbent is a zeolite.
46. (Original) The method of claim 45, wherein it is preferred to use such zeolites as the faujasites, particularly zeolite Y and zeolite X, those, having a pore size greater than 10 angstrom in diameter.
47. (Canceled)
48. (Original) The method of claim 26, wherein the sorbent porous structure of the particulate catalyst impregnated sorbent is a perlite form.
49. (Original) The method of claim 48, wherein the perlite is present in the sorbent support composition in an amount of from 15 to 30 weight percent.
50. (Previously presented) The method of claim 1, wherein the solvent is a polar

organic and/or inorganic solvent which include aromatics, halogenated aromatics, organo-chlorinated compounds, ketones and alcohols.

51. (Original) The method of claim 50, wherein the polar organic solvent is toluene.
52. (Original) The method of claim 50, wherein the polar organic solvent is acetone.
53. (Original) The method of claim 50, wherein the polar organic solvent is methanol.
54. (Original) The method of claim 50, wherein the polar organic solvent is ethanol.
55. (Original) The method of claim 50, wherein the polar inorganic solvent is dichloromethane.
56. (Original) The method of claim 50, wherein the polar inorganic solvent is dichloroethane.
57. (Original) The method of claim 50, wherein the polar inorganic solvent is dichlorobenzene.
58. (Original) The method of claim 1, wherein the polar solvent is a combination of solvents as follows, including aromatics, halogenated aromatic, organo-chlorinated compounds, ketones and alcohols.
59. (Original) The method of claim 58, wherein the combinations of polar solvents are selected from the list as follows: toluene, dichlorobenzene, dichloromethane, dichloroethane, cyclopentane, acetone, ethanol and methanol.
60. (Original) The method of claim 1, wherein for drying the particulate catalyst impregnated sorbent is heated up to the temperatures from 15° C to 150° C, dependent upon the vapor rate of the polar solvent used to wash the sorbent.
61. (Original) The method of claim 60, wherein the blowing through the hot gas is used in addition to the heat.